NOAA
R 226
PISCES

GENERAL NOTES:

1. THE VESSEL SHALL BE CLASSIFIED UNDER ABS MALTESE CROSS A1, CIRCLE E, UNRESTRICTED SERVICE AND ICE CLASS C0.
2. ALL MATERIAL SHALL BE ORDINARY STRENGTH STEEL, ABS GRADE A, UNLESS OTHERWISE NOTED.
3. DEEP TANK OVERFLOW HEIGHTS ARE ASSUMED AT THREE FEET ABOVE THE WEATHER DECK ABOVE THE TANK.
4. WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE "NOAA STATEMENT OF REQUIREMENTS" AND ACCEPTABLE COMMERCIAL MARINE QUALITY.
5. ALL WELDING SHALL BE IN ACCORDANCE WITH REFERENCE NO. 2.
6. END CONNECTION DETAILS SHALL BE IN ACCORDANCE WITH HMI STANDARDS, REFERENCE NO. 6.
7. STIFFENER & GIRDER END CONNECTIONS SHALL BE DESIGNATED AS FOLLOWS:
   "EC-S": CUT MEMBER ONE INCH SHORT
   "EC-W": WEB IS CONNECTED
   "EC-F": FULL CONNECTION – WEB AND FLANGE STRENGTH MAINTAINED.
   "EC-A": EFFECTIVE BRACKET PER ABS RULES, PART 3, SECTION 2-5.3
8. UNLESS OTHERWISE NOTED, ALL END CONNECTIONS SHALL BE "EC-F".
9. COPES, SNIPES AND DRAINS SHALL BE IN ACCORDANCE WITH HMI STANDARDS, REFERENCE NO. 6.
10. PLATES & SHAPES ARE IN IMPERIAL UNITS. DIMENSIONS ARE IN METRIC UNITS
11. GIRDERS SHALL BE FITTED WITH TRIPPING BKT'S IAW ABS RULES FOR STEEL VESSELS UNDER 90m IN LENGTH.
12. THE CORNER RADIUS OF OPENINGS IN DECKS & SHELL, MUST BE GENERALLY 1/8 THE TRANSVERSE DIMENSION OF THE OPENING, WITH A MINIMUM OF 150 & A MAXIMUM OF 600. ON MAIN TRANSVERSE BULKHEADS, THE RADIUS MUST BE 1/20 OF THE VERTICAL WITH A MINIMUM OF 150.

FUME–TIGHT (FT) BULKHEAD DETAILS

LOCATION	ORIENTATION	STIFFENER SPACING (mm)	PLATE THICKNESS (in)	STIFFENER TYPE	END CONN. TOP	END CONN. BOTTOM
2ND DECK	TRANSVERSE	625	1/4	L3x2x1/4	S	S
2ND DECK	LONG'L	600	1/4	L3x2x1/4	S	S
MAIN DECK	TRANSVERSE	625	1/4	L3x2x1/4	S	S
MAIN DECK	LONG'L	600	1/4	L3x2x1/4	S	S

REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
1	5–B 19–C 31–A VAR. 36–A	1. SHT 1, REFERENCES: ADDED REFERENCE 14. 2. SHT 3, PLAN 19–C: REVISED HEADER DIMENSION FROM 242 TO 215 P/S; ADDED L5x5x5/16 HEADERS IWO WINDLASS FDN. 3. SHT 4, SECT. 31–A: ADDED 2x1/4 FB RIDER PLATES TO TRSV DK STIFFENERS IWO CHAIN LKR FROM CHAIN PIPE TO OUTBD BHD, P/S. 4. SHT 4, SECT. 25–C & 31–A: ADDED 5/8" PL BKTS IWO 1ST PLATFORM STIFFENER AND WEB FRAME CONNECTION. 5. SHT 5, SECT. 36–A: ADDED 5/8" PL BKTS IWO 1ST PLATFORM STIFFENER AND WEB FRAME CONNECTION. ITEMS 1 – 3 PER REWORK #741–0005. ITEMS 4 – 5 PER ABS COMMENTS ROLLED OVER FROM M279–100–FH02	1/29/04 AGE	1/30/04 RG
2		1. EXTENDED HULL APPLICABILITY TO INCLUDE HULL 1956. ITEM 1 PER ENGINEERING DEVELOPMENT.	3/21/05 RMW	3/24/05 FH
3		1. SH 1, EXTENDED HULL APPLICABILITY TO INCLUDE HULL 1957. 2. SH 1, ADDED "AS–BUILT" STAMP, APPLICABLE TO M283 ONLY. ITEM 1 & 2 PER ENGINEERING DEVELOPMENT.	7/31/06 MDP	

AS–BUILT

FUNCTIONAL DESIGN DRAWING
NOT FOR CONSTRUCTION

DOCUMENT DISTRIBUTION RECORD

DATE IN ROOM	9/4/03	1/30/04	3/22/05	7/31/06													
ISSUE DATE	9/5/03	2/2/04	3/24/05														
REV#	0	1	2	3													
PROJECT ENG	1	1	1	1													
PROJECT MGR	1	1	1	1													
ABS	10																
USPH																	
USCG																	
HMP PC	12	12	12	12													
PROD DESIGN GROUP	1(3)	1(3)	1(3)	1(3)													
HULL MGR																	
HULL LEAD	(1)	(1)	(1)	(1)													
HVAC	1	1															
JOINER	1	1															
PASCAGOULA PC	3	3(1)	3(1)	3(1)													
NOISE CONT																	
VLL																	
ISSUED BY	AE	AE	AE	MP													

DWG NO. M282–100–FH02 SH 1

REFERENCES

NO.	TITLE	DRAWING NUMBER
14	MISC. FOUNDATION BOOKLET	M282–180–FH43
13	MAST DETAILS	M282–170–FH22
12	BOWTHRUST INSTALLATION (ELLIOT)	W 5104WG
11	BOWTHRUST ROOM LAYOUT & DETAILS	M282–561–FM04
10	STORES MONORAIL LAYOUT & DETAILS.	M282–572–FH65
9	ANCHOR STOWAGE & HANDLING LAYOUT AND DETAILS	M282–100–FH20
8	BULWARKS–LAYOUT & DETAILS	M282–111–FH17
7	HULL MIDBODY SCANTLINGS, FR.19 –FR.49	M282–100–FH03
6	TYPICAL STRUCTURAL DETAILS	M282–100–FH67
5	STRUCTURAL DOORS, HATCHES & MANHOLES	M282–602–FH62
4	BERPS & WERPS KEY PLAN & DETAILS	M282–100–FH68
3	MOORING & TOWING FITTINGS FOUNDATION	M282–170–FH28
2	WELDING BOOKLET	M282–504–FH90
1	GENERAL ARRANGEMENT	M282–085–FA02

DRAWING INDEX

SH	DESCRIPTION
7	SECTIONS & PLANS
6	SECTIONS
5	SECTIONS & PLANS
4	SECTIONS & ELEVATIONS
3	01 LEVEL, SECTIONS & ELEVATIONS
2	BOTTOM SHELL PLAN TO MAIN DECK
1	TITLE

HULL APPLICABILITY

M282 HULL 1953
M283 HULL 1956
M284 HULL 1957

REVISION STATUS

10	9	8	7	6	5	4	3	2	1	REV
				6	6	1	1	1	3	REV
									1	SH

DRL NUMBERS

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VT Halter Marine, Inc.
Vision Technologies Systems

DRAWN BY	WH 7/22/03	ABS APPV	
CHECKED BY	AE 8/24/03	USCG APPV	
APPROVED BY	JCO 9/3/03	OWNER APPV	
HULL NO	APPLICABILITY	CAGE CODE	3B213
SIZE	D		
ESTIMATE NO	00–104	SCALE	NONE

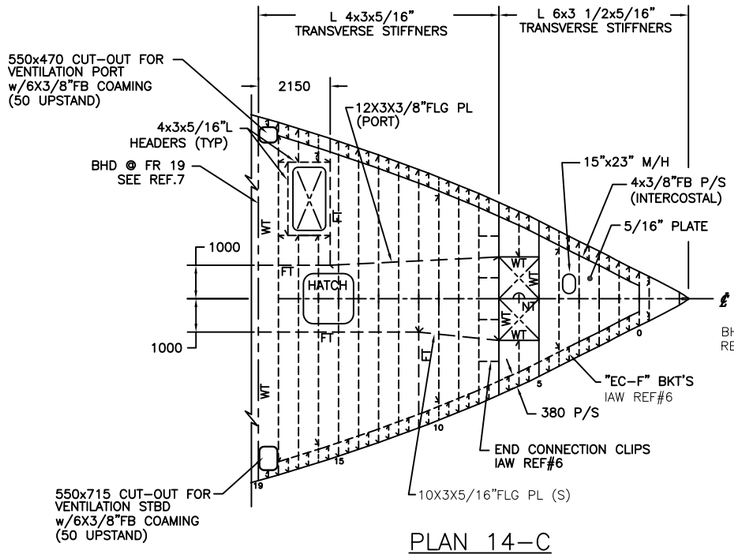
VESSEL: FRV40 CLASS 63m FISHERIES RESEARCH VESSEL

TITLE: HULL FOREBODY SCANTLINGS FR. 0 – FR. 18

JOB NO.	ITEM	DELIVERABLE	SHEET	REV
M282	100	FH02	001	03

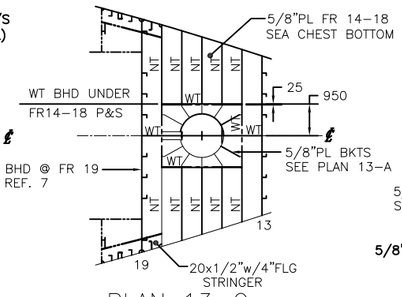
FILE R:\M282\FUNCTIONAL DESIGN\IN WORK\HULLDWGS | SHEET 1 OF 7

PLOT: 1:1



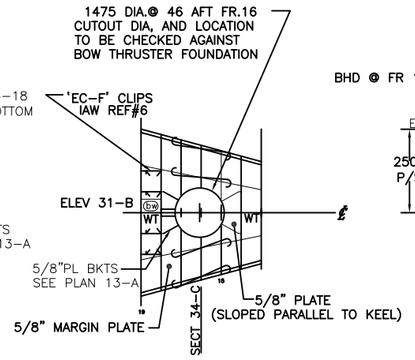
PLAN 14–C

MAIN DECK– 8650mm ABL
FRAME SPACING = 600mm
STIFFENER & GIRDER END CONNECTIONS "EC–F" UNO
SCALE= 1:80



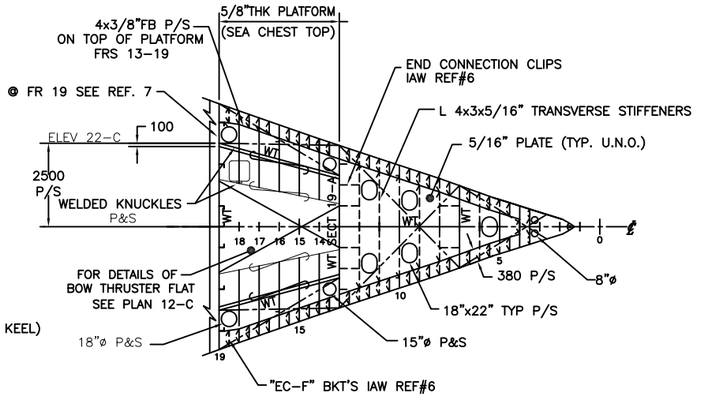
PLAN 13–C

SEACHEST BOTTOM PLAN
SCALE= 1:80


1475 DIA.@ 46 AFT FR.16 CUTOUT DIA, AND LOCATION TO BE CHECKED AGAINST BOW THRUSTER FOUNDATION
'EC–F' CLIPS IAW REF#6
ELEV 31–B
5/8"PL BKTS SEE PLAN 13–A
5/8" MARGIN PLATE
5/8" PLATE (SLOPED PARALLEL TO KEEL)
SECT 34–C

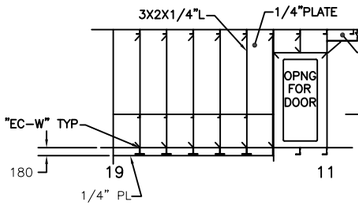
PLAN 12–C

BOW THRUSTER FLAT (SLOPED – PARALLEL TO KEEL)
2867 ABL @ FR.16
SCALE= 1:80



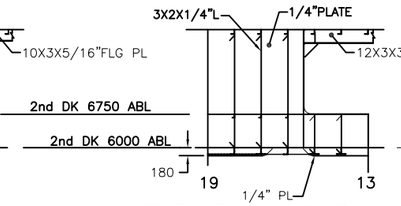
PLAN 10–C

1st PLATFORM – 3250mm ABL
FRAME SPACING = 600mm U.N.O.
STIFFENER & GIRDER END CONNECTION "EC–F" U.N.O.
SCALE= 1:80



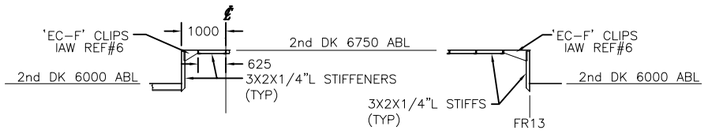
ELEVATION 13–B

LONG'L BHD 1000 OFF CL
STBD SIDE
SCALE= 1:60



ELEVATION 12–B

LONG'L BHD 1000 OFF CL
PORT SIDE
SCALE= 1:60

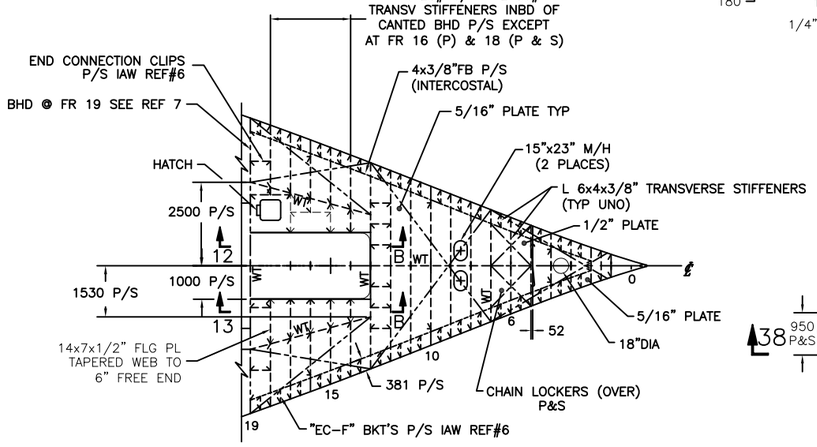


SECTION 11–B

FR15 PORT ONLY
FR14 PORT ONLY SIM
SCALE= 1:60

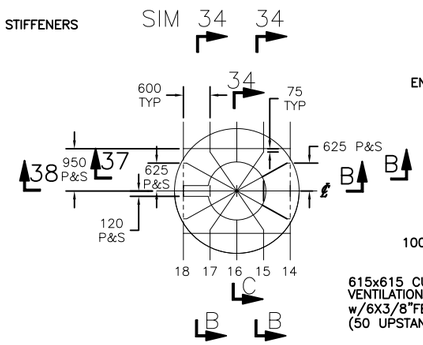
ELEVATION 9–B

625 OFF CL
PORT SIDE SHOWN, STBD SIM TO OPP HAND
SCALE= 1:60


WT6x25# c/f W12x50# TRANSV STIFFENERS INBD OF CANTED BHD P/S EXCEPT AT FR 16 (P) & 18 (P & S)
END CONNECTION CLIPS P/S IAW REF#6
4x3/8"FB P/S (INTERCOSTAL)
BHD @ FR 19 SEE REF 7
5/16" PLATE TYP
HATCH
15"x23" M/H (2 PLACES)
L 6x4x3/8" TRANSVERSE STIFFENERS (TYP UNO)
2500 P/S
1/2" PLATE
1000 P/S
1530 P/S
5/16" PLATE
18"DIA
14x7x1/2" FLG PL TAPERED WEB TO 6" FREE END
381 P/S
CHAIN LOCKERS (OVER) P&S
"EC–F" BKT'S P/S IAW REF#6

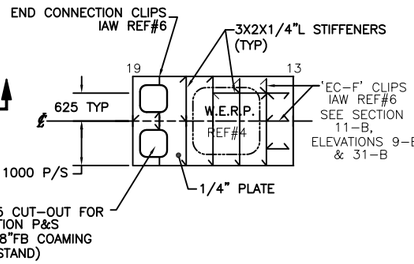
PLAN 14–A

2ND DECK – 6000mm ABL
FRAME SPACING = 600mm
STIFFENER & GIRDER END CONNECTIONS "EC–F" UNO
SCALE= 1:80



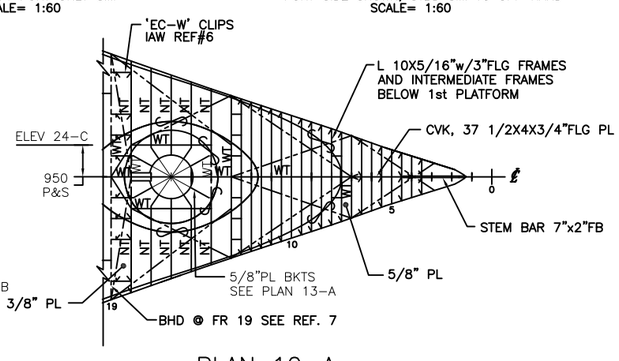
PLAN 13–A

BOTTOM SHELL I.W.O. BOWTHRUST UNIT
SCALE= 1:60


END CONNECTION CLIPS IAW REF#6
3X2X1/4"L STIFFENERS (TYP)
'EC–F' CLIPS IAW REF#6
SEE SECTION 11–B, ELEVATIONS 9–B & 31–B
625 TYP
W.E.R.P. REF#4
1000 P/S
1/4" PLATE
615x615 CUT-OUT FOR VENTILATION P&S w/6X3/8"FB COAMING (50 UPSTAND)

PLAN 12–A

2ND DECK – 6750mm ABL
FRAME SPACING = 600mm
STIFFENER & GIRDER END CONNECTIONS "EC–F" UNO
SCALE= 1:60


'EC–W' CLIPS IAW REF#6
L 10X5/16"w/3"FLG FRAMES AND INTERMEDIATE FRAMES BELOW 1st PLATFORM
ELEV 24–C
CVK, 37 1/2X4X3/4"FLG PL
950 P&S
STEM BAR 7"x2"FB
5/8"PL BKTS SEE PLAN 13–A
5/8" PL
3/8" PL
BHD @ FR 19 SEE REF. 7

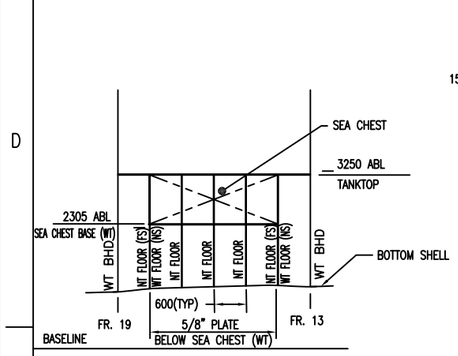
PLAN 10–A

BOTTOM SHELL PLAN
FR. 0 – FR. 19
FRAME SPACING = 600mm U.N.O.
SCALE= 1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.O.N.

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	02	00
ESTIMATE NO	SCALE						
00–104	AS NOTED		FILE:R:\M282\FUNCTIONAL DESIGN\IN WORK\HULLDWG\FH02_002_00.DWG		SHEET 2 OF 7		

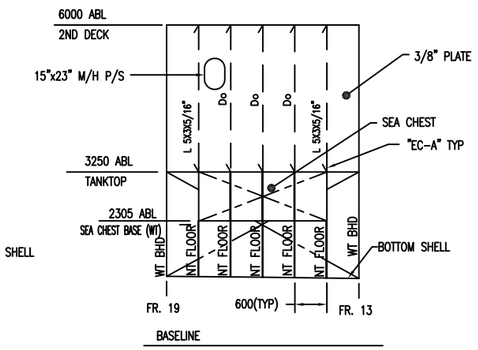
PLOT: 1/1

DWG NO. M282–110–FH02 SH 2



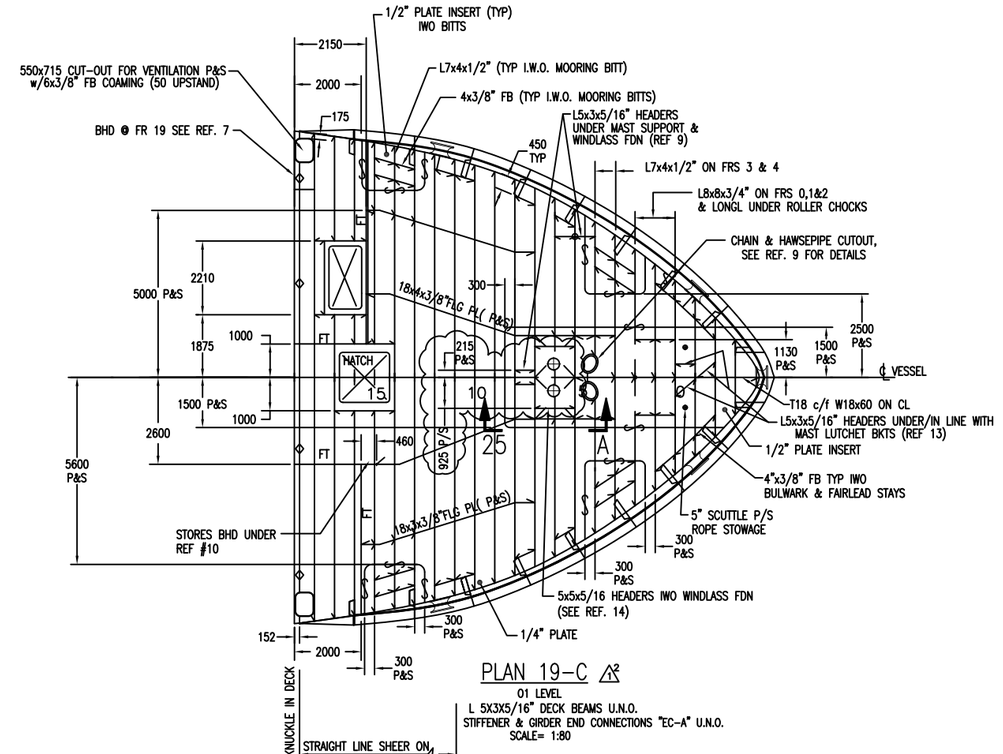
ELEVATION 24-C

BHD 950 OFF CL
PORT SHOWN, STBD SIM BUT OPP HAND
SCALE= 1:50



ELEVATION 22-C

CANTED BHD 2500/1530 OFF CL
PORT SHOWN, STBD SIM BUT OPP HAND
STIFFENER & GIRDER END CONNECTIONS "EC-A"
SCALE= 1:50

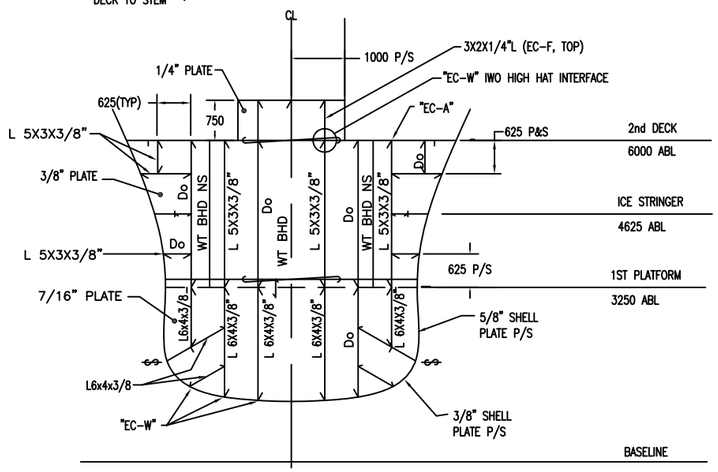

1/2" PLATE INSERT (TYP) IWO BITTS
550x715 CUT-OUT FOR VENTILATION P&S w/6x3/8" FB COAMING (50 UPSTAND)
L7x4x1/2" (TYP I.W.O. MOORING BITT)
4x3/8" FB (TYP I.W.O. MOORING BITTS)
BHD @ FR 19 SEE REF. 7
L5x3x5/16" HEADERS UNDER MAST SUPPORT & WINDLASS FDN (REF 9)
L7x4x1/2" ON FRS 3 & 4
L8x8x3/4" ON FRS 0,1&2 & LONGL UNDER ROLLER CHOCKS
CHAIN & HAWSEPIPE CUTOUT, SEE REF. 9 FOR DETAILS
18x4x3/8"FLG PL(P&S)
NATCH
T18 c/f W18x60 ON CL
L5x3x5/16" HEADERS UNDER/IN LINE WITH MAST LUTCHET BKTS (REF 13)
1/2" PLATE INSERT
4"x3/8" FB TYP IWO BULWARK & FAIRLEAD STAYS
5" SCUTTLE P/S ROPE STOWAGE
STORES BHD UNDER REF #10
5x5x5/16 HEADERS IWO WINDLASS FDN (SEE REF. 14)
1/4" PLATE
STRAIGHT LINE SHEER ON DECK TO STEM

PLAN 19-C

01 LEVEL
L 5X3X5/16" DECK BEAMS U.N.O.
STIFFENER & GIRDER END CONNECTIONS "EC-A" U.N.O.
SCALE= 1:80

SECTION 23-A

WT BHD @ FR 7
LOOKING FORWARD
SCALE= 1:50



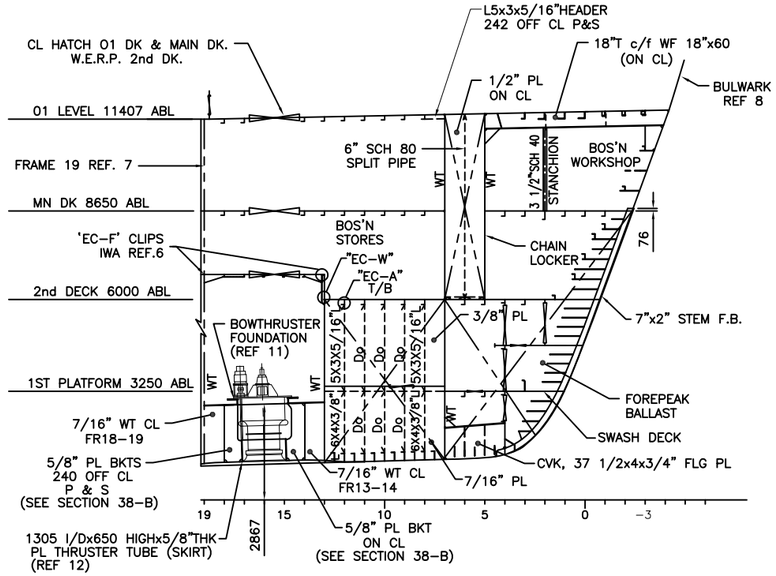
SECTION 19-A

WT BHD @ FR 13
LOOKING FWD
SCALE= 1:50
STIFFENER & GIRDER END CONNECTIONS "EC-F" U.N.O.

DWG NO. M282-100-FH02 SH 3

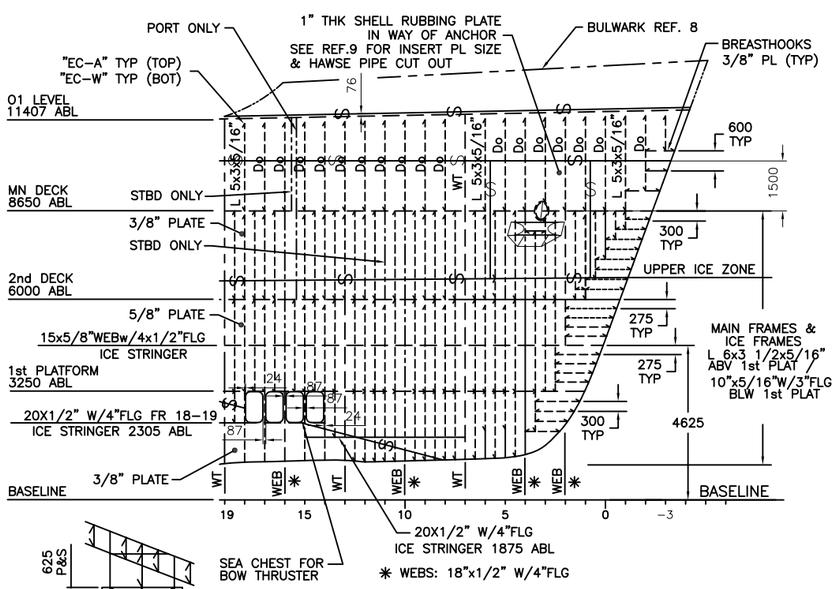
HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	03	01
ESTIMATE NO 00-104	SCALE AS NOTED		FILE R:\M282\FUNCTIONAL DESIGN\IN WORK\HULL\DWGS\FH02-003-01.DWG			SHEET 3 OF 7	

PLOT: 1/1



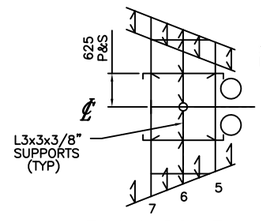
ELEVATION 31–B

INBOARD PROFILE
CENTERLINE OF SHIP
LOOKING TO PORT
SCALE=1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



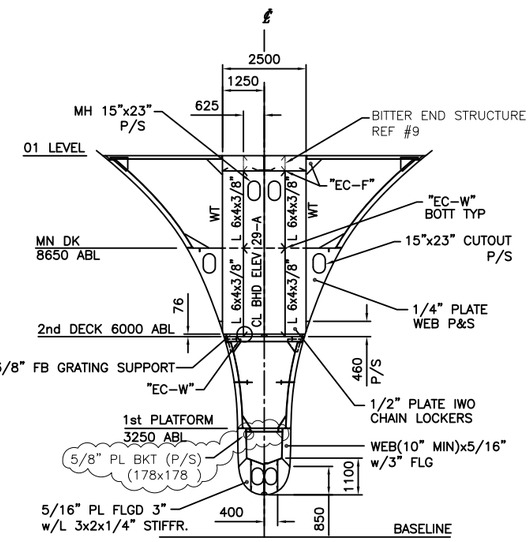
ELEVATION 27–B

OUTBOARD PROFILE
SCALE=1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.
ICE FRAME END CONNECTIONS REQUIRE
A BRACKET WITH A 3" FLANGE.
SEE SHT.5 OF REF.7



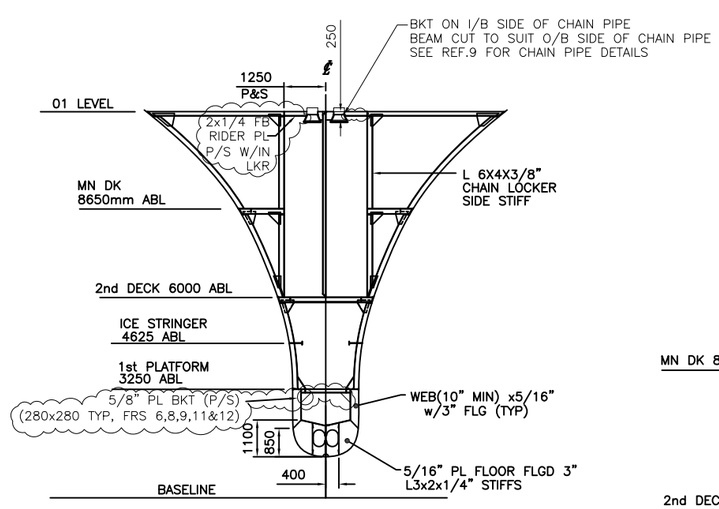
PLAN 29–B

6000 ABL
SUPPORT MEMBERS FOR
CHAIN LKR BOTTOM GRATING
SCALE=1:50



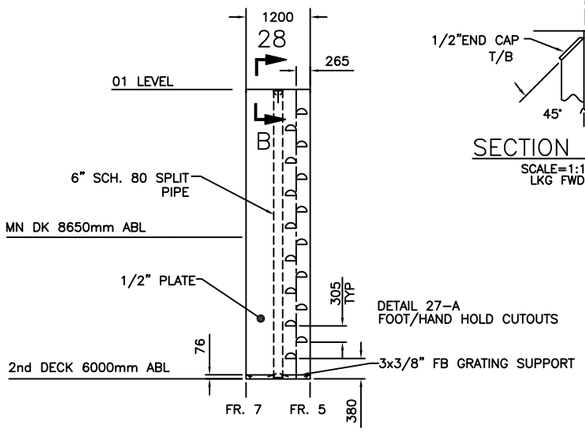
SECTION 25–C ⚠4

CHAIN LOCKER @ FR. 5
LOOKING FORWARD
SCALE 1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" UNO



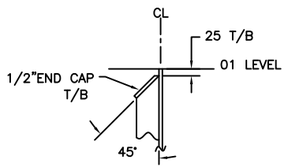
⚠3,4 SECTION 31–A

FR 6 LOOKING FWD
SCALE 1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



ELEVATION 29–A

CHAIN LOCKER CL BHD
LOOKING TO PORT
SCALE=1:50
STIFFENER & GIRDER END CONNECTIONS "EC–S" U.N.O.

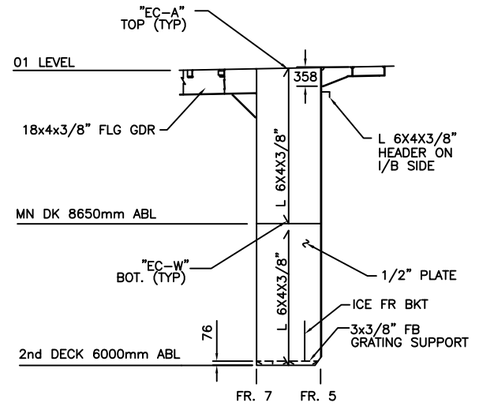


SECTION 28–B

SCALE=1:10
LKG FWD

DETAIL 27–A

SCALE=1:10



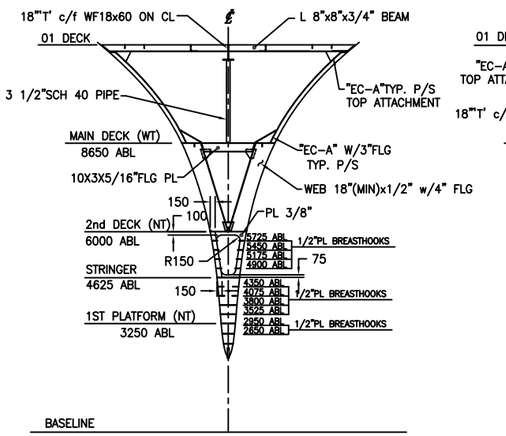
ELEVATION 25–A

CHAIN LOCKER 1250 OFF CL P/S
STBD SHOWN, PORT SIM. OPP. HD.
SCALE=1:50

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	04	01
ESTIMATE NO	SCALE						
00–104	AS NOTED						

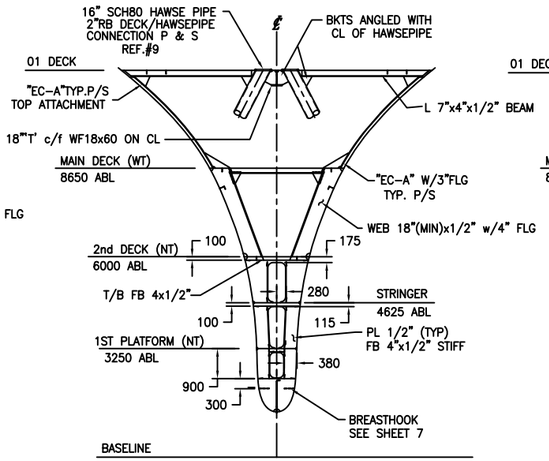
FILE:R:\M282\FUNCTIONAL DESIGN\IN WORK\HULLDWG\FH02-004-01.DWG SHEET 4 OF 7
PLOT: 1/1

DWG NO. M282–110–FH02–004 SH 4



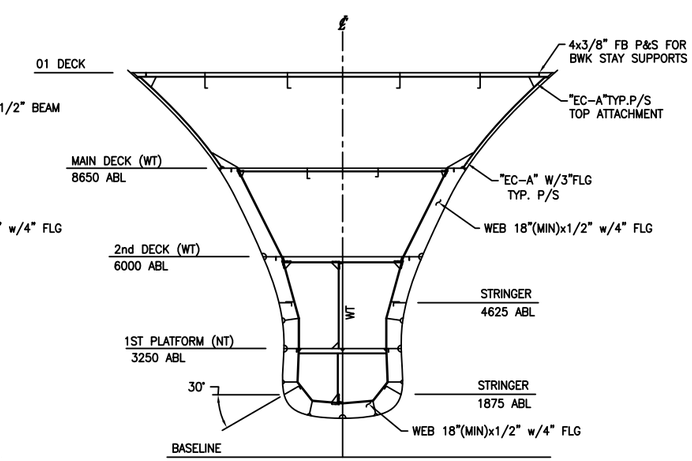
SECTION 39–C

FRAME 2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



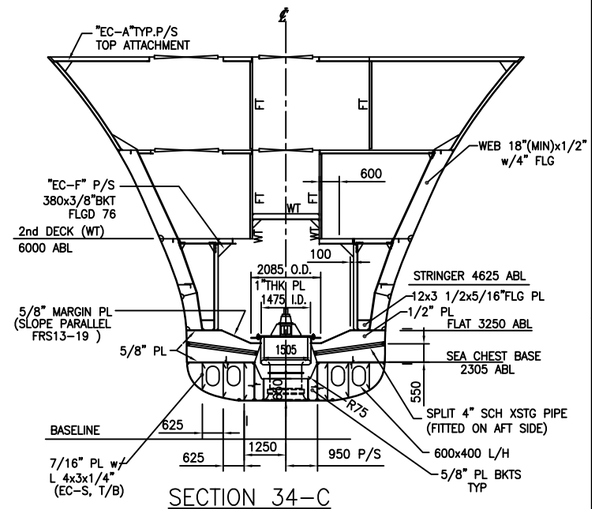
SECTION 38–C

FRAME 4 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



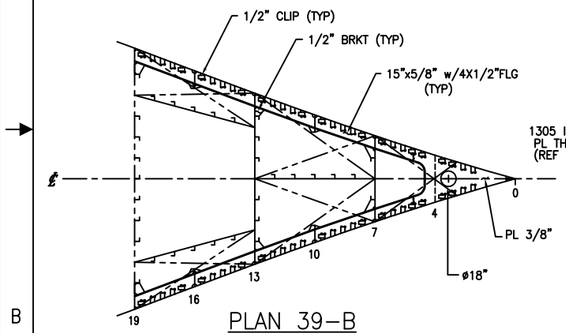
SECTION 36–C

FRAME 10 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



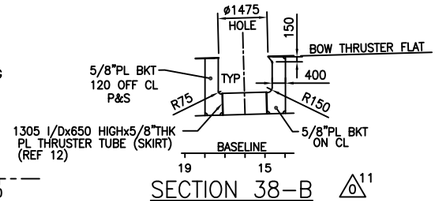
SECTION 34–C

FRAME 16 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



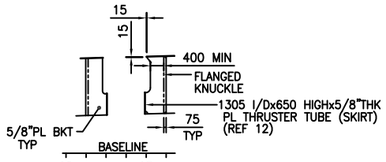
PLAN 39–B

STRINGER 4625 ABL



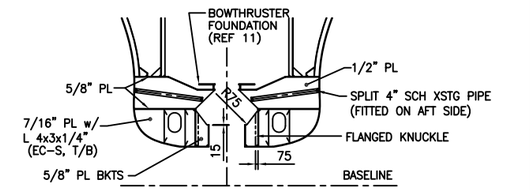
SECTION 38–B ⚠11 0

LOOKING TO PORT
–FOR DETAILS NOT INDICATED SEE SECTION 37–B



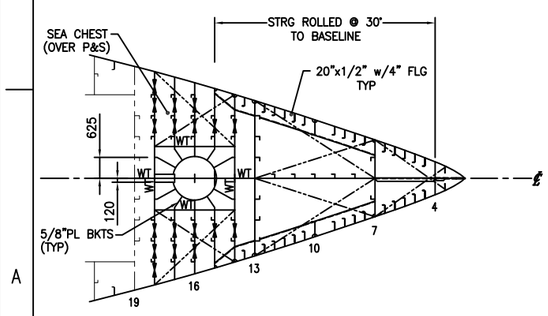
SECTION 37–B

LOOKING TO PORT
–FOR DETAILS NOT INDICATED SEE SECTION 38–B



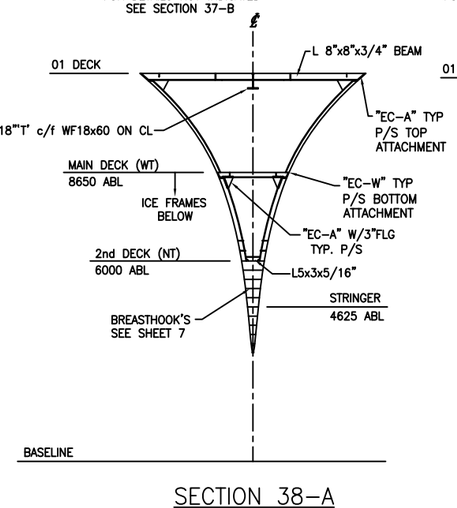
SECTION 34–B

FRAME 15 LOOKING FWD
FR17 SIMILAR
FOR FURTHER DETAILS SEE SECTION 34–C



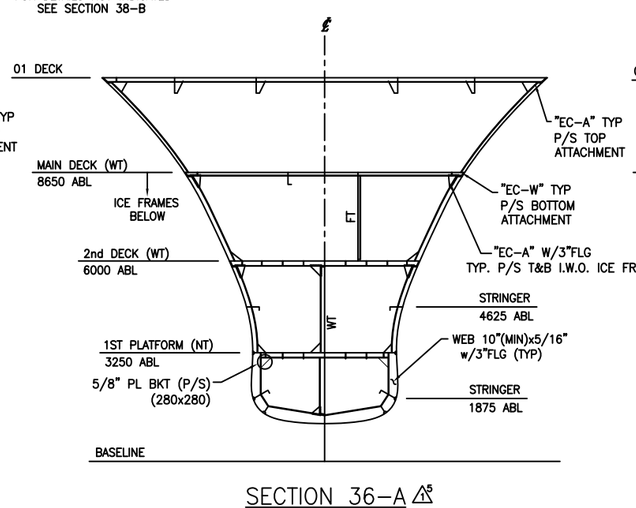
PLAN 39–A

STRINGER 1875 ABL



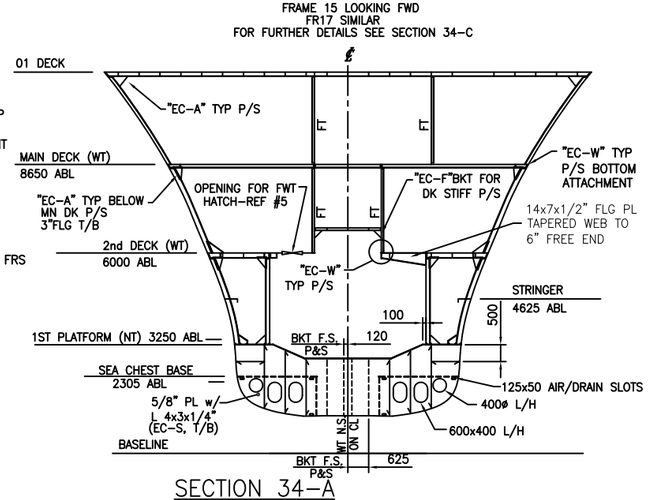
SECTION 38–A

FRAME 1 LOOKING FWD



SECTION 36–A ⚠5

FRAME 12 LOOKING FWD



SECTION 34–A

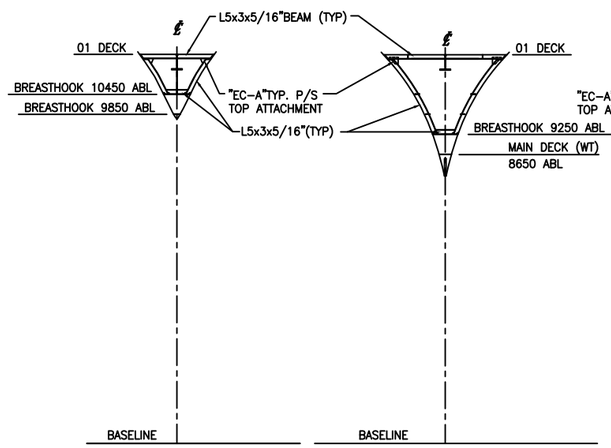
FRAME 18 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.

DWG NO. M282–100–FA02 SH 5

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	05	01
ESTIMATE NO 00–104	SCALE 1:80		FILE R:\M282\FUNCTIONAL DESIGN\IN WORK\HULL\DWG\FH02-005-01.DWG			SHEET 5 OF 7	

PLOT: 1/80

FOR BREASTHOOK DETAILS
SEE SHEET 7

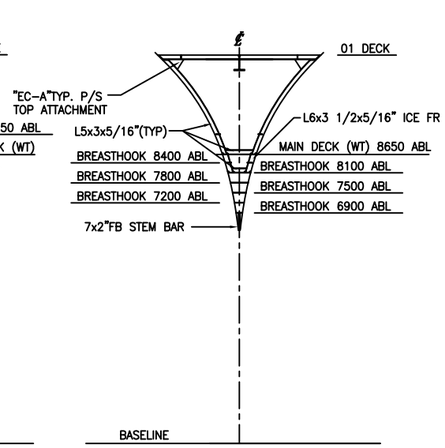


SECTION 48–C

FRAME –3 LOOKING FWD
STIFFENER & GIRDER
END CONNECTIONS "EC–F" U.N.O.

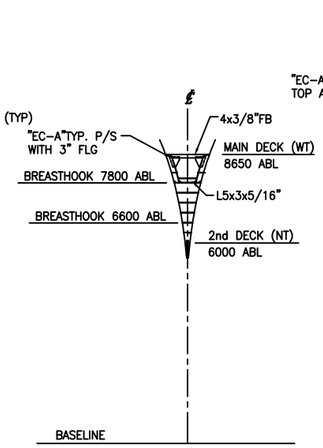
SECTION 47–C

FRAME –2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



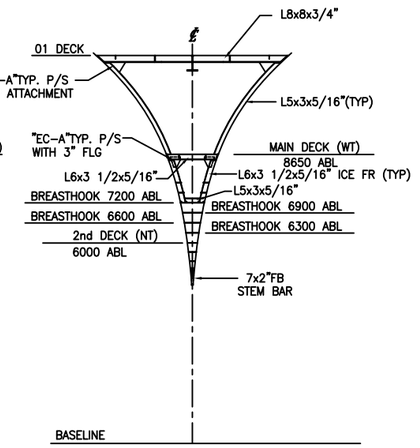
SECTION 46–C

FRAME –1 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



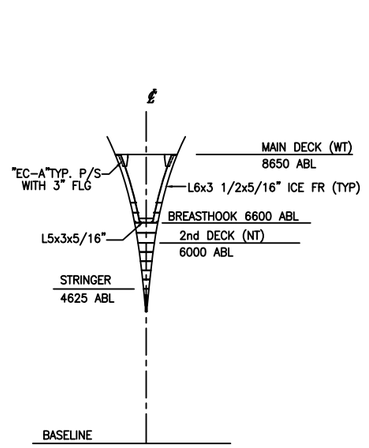
SECTION 44–C

INT. ICE FRAME –1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



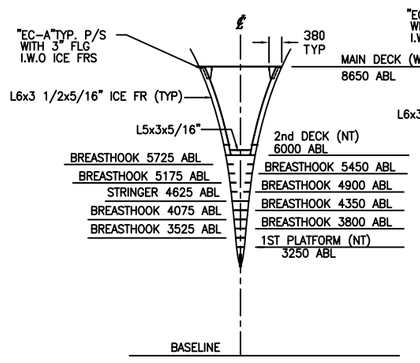
SECTION 43–C

FRAME 0 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



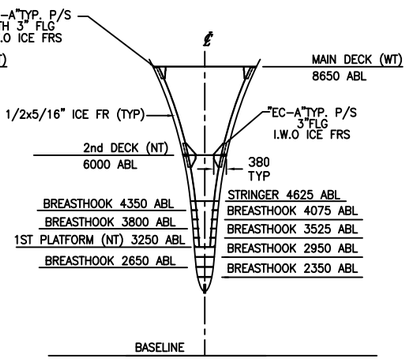
SECTION 42–C

INT. ICE FRAME 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



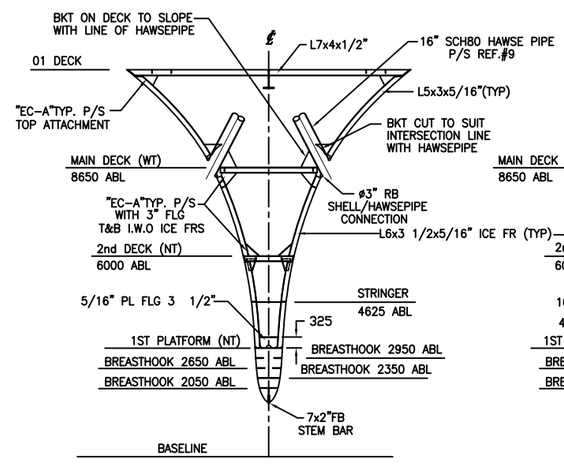
SECTION 48–A

INT. ICE FRAME 1 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



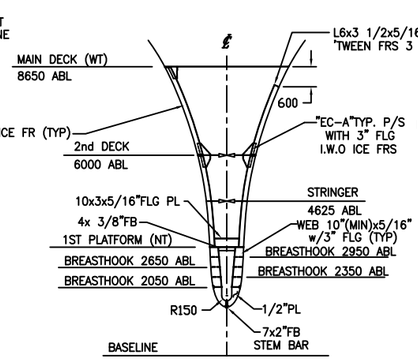
SECTION 46–A

INT. ICE FRAME 2 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



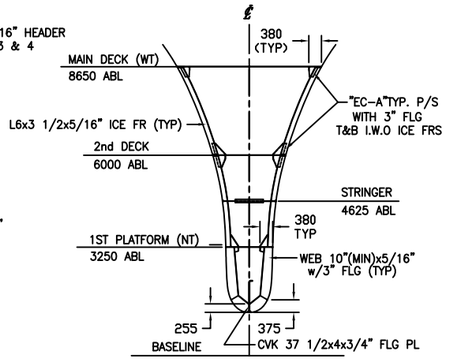
SECTION 44–A

FRAME 3 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



SECTION 43–A

INT. ICE FRAME 3 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



SECTION 41–A

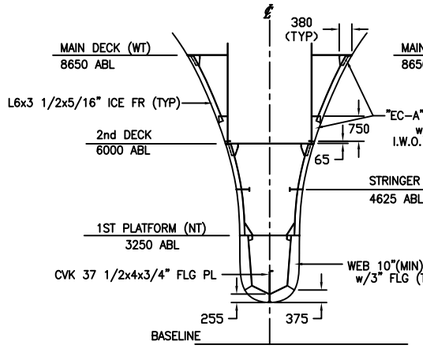
INT. ICE FRAME 4 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.

FOR BREASTHOOK DETAILS
SEE SHEET 7

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	06	00
ESTIMATE NO 00–104	SCALE 1:80		FILE R:\M282\FUNCTIONAL DESIGN\IN WORK\HULLDWG\FH02_006_00.DWG			SHEET 6 OF 7	

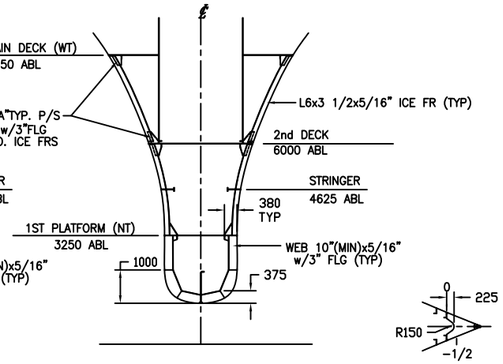
DWG NO. M282-100-FH02 SH6

PLOT:1/00



SECTION 56–D

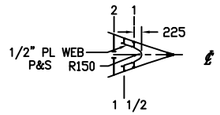
INT. ICE FRAME 5 1/2 LOOKING FWD
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.



SECTION 54–D

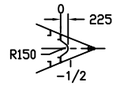
ICE FRAME 6 1/2 LOOKING FWD
SCALE=1:80
STIFFENER & GIRDER END CONNECTIONS "EC–F" U.N.O.

ALL BREASTHOOKS 1/2"PL U.N.O.



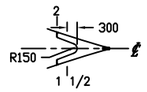
PLAN 52–DD

BREASTHOOK 6300 ABL



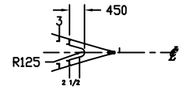
PLAN 53–D

BREASTHOOK 7500 ABL



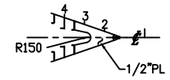
PLAN 52–D

BREASTHOOK 5725 ABL



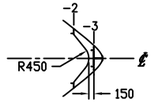
PLAN 51–D

BREASTHOOK 4350 ABL



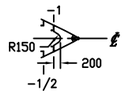
PLAN 49–D

BREASTHOOK 2950 ABL



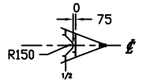
PLAN 56–C

BREASTHOOK 10450 ABL



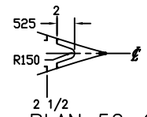
PLAN 55–C

BREASTHOOK 8400 ABL



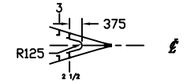
PLAN 53–C

BREASTHOOK 7200 ABL



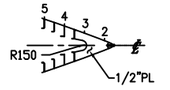
PLAN 52–C

BREASTHOOK 5450 ABL



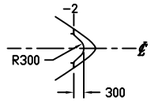
PLAN 51–C

BREASTHOOK 4075 ABL



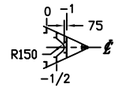
PLAN 49–C

BREASTHOOK 2650 ABL



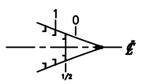
PLAN 56–B

BREASTHOOK 9850 ABL



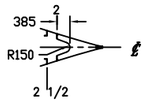
PLAN 55–B

BREASTHOOK 8100 ABL



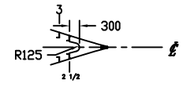
PLAN 53–B

BREASTHOOK 6900 ABL



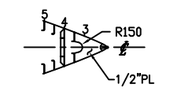
PLAN 52–B

BREASTHOOK 5175ABL



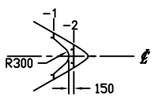
PLAN 51–B

BREASTHOOK 3800 ABL



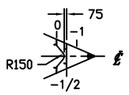
PLAN 49–B

BREASTHOOK 2350 ABL



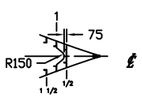
PLAN 56–B

BREASTHOOK 9250 ABL



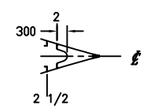
PLAN 55–A

BREASTHOOK 7800 ABL



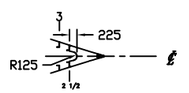
PLAN 53–A

BREASTHOOK 6600 ABL



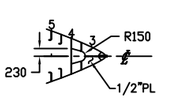
PLAN 52–A

BREASTHOOK 4900 ABL



PLAN 51–A

BREASTHOOK 3525 ABL



PLAN 49–A

BREASTHOOK 2050 ABL

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1953	3B213	D	M282	100	FH02	007	00
ESTIMATE NO 00–104	SCALE 1:80		FILE R:\M282\FUNCTIONAL DESIGN\IN WORK\HULLDWG\FH02_007_00.DWG			SHEET 7 OF 7	

DWG NO. M282–100–FH02 SH 7

PLOT: 1/00